

AN INFLUENZA EPIDEMIC IN SOLDIERS.

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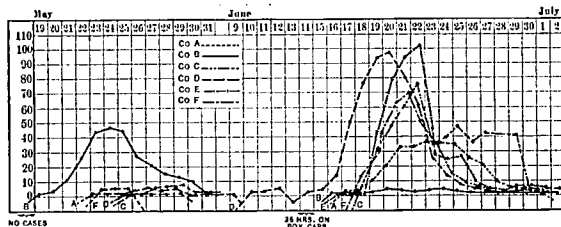
FIRST LIEUTENANT, M. R. C., UNITED STATES ARMY.

DURING the early summer of 1918 an epidemic of what was probably influenza occurred in this regiment, 11th Engineers, and for a time seriously impaired its working strength. The explosive nature of the epidemic, the comparative mildness of the disease and short duration of illness in each case, the absence of complications and yet the extraordinary manner in which the disease cut down the number of effectives are of interest. The daily incidence of new cases and the number of days each man spent in quarters were determined from the daily sick reports of the companies. Remarks on the disease itself and on the temperature associated with it are from notes and temperature charts prepared during the latter part of the epidemic.

In May and until June 13 the entire regiment was camped on a wooded hill, the tents being scattered under the trees to obtain the best concealment, but company grouping being maintained. On the latter date the regiment moved and on arrival at the new location, on June 15, camp was pitched in the regulation manner in an open field. On June 18 Company E left this camp, moving about one hundred miles, and on June 19 Company C and the Headquarters Detachment moved about ten miles distant. The remaining companies preserved their original locations and arrangements until the early part of July, when the epidemic had subsided. During all of this period the weather was very dry and at each camp dust from the roads was very heavy. It is thought that the railway journey, with the men crowded into box cars, had considerable influence in the increase of the infection in all companies after June 13.

In the whole epidemic cases occurred in two distinct groups: The first group, May 19 to June 8, included 95 cases, 65 of these being in Company B, and the second group, of 518 cases, June 9 to July 3, occurred throughout the regiment, with but 9 cases in Company B, and of these 6 were in the company officers, where the infection had not been previously. The Medical, Transportation and Headquarters Detachments each had its epidemic, but these cases have not been included in this report. One note was made in the cases in the Medical Detachment; the enlisted men here were caring for the sick, were thus freely exposed and nearly the whole detachment was taken ill during the first period.

The course of the disease in each company during each period is graphically represented in the following chart:



The disease appeared in Company B on May 19. By May 21 there were 11 men in quarters, some of them apparently quite sick. A quarantine was then established over the whole camp and between the companies. Also, the men as they reported sick were grouped into isolation tents and there kept strictly away from the well men in the company, even their food being brought to them by enlisted men of the Medical Corps. Company B developed 65 cases; the largest number admitted was 19 on May 22 and the greatest number in quarters on one day was 47 on May 24. The other cases were: 8 in Company A, 11 in C, 5 in D, 6 in F and none in Company E, a total of 95 cases, with a loss of 408 "man days." By June there was but 1 case, in Company A, in camp. Four days later 5 new cases had appeared in Company D. The following day, June 13, as the regiment had orders to move, every case in camp was sent to hospital. The move was made in the usual freight cars, 22 men to each car, and consumed thirty-six hours. On the morning of arrival, June 17, there were 7 new cases, all in Company D. On June 17 there were 36 new cases admitted, and this company epidemic reached its high mark of 98 cases in quarters on June 20. In Company F the first case was on June 17; there were 28 new cases on June 19 and on June 21 there were 70 men in quarters. Company E had 2 cases the day of its departure, June 18, and the next day 41 cases were admitted, with the greatest number in quarters, 102, on June 22. Company C left the morning of the 19; by "Taps" that night had admitted 30 men and reached the high mark of 77 on June 22. The epidemic in Company A was not so explosive in character, the greatest number in quarters at any one time being 38 and the largest number of admissions 15, both being on June 23. Cases in all companies in the second period totalled 518, with 70 in Company A, 9 in B, 115 in C, 123 in each of D and E Companies and 78 in F, with a loss of 2198 "man days." In the whole epidemic there were in the 6 companies 613 men sick, and it was found that the average time in quarters was 4.26 days per man. After discharge from quarters they were allowed to remain at some light duty

for one to three days. There were 22 men sent to hospital, including 7 cases sent on June 13 when the regiment moved. The time lost by these hospital cases and that by the men on light duty has not been included in the estimate of time lost, as neither could be accurately estimated. It is interesting to note the few cases in Company B in the second period, showing that the company was rendered immune by the earlier infection. That immunity was slight or of short duration is evident, as there were undoubted recurrent cases.

The onset of the disease was sudden, often developing in a few hours, with fever and chilliness, prostration, headache and vertigo. There was usually general muscular soreness, an irritative non-productive cough, a slightly sore throat and injected conjunctivæ, and constipation often obstinate. The headache was frontal, usually severe and often described as being in or behind the eyeballs; muscular pain was most severe in the lumbar region, but a number of men complained of severe pain in the muscles of the upper abdomen. In a few cases there were diarrhea and vomiting at the onset. Nearly every case was marked by 3 outstanding features: a thickly coated tongue, marked enlargement of the glands over the mastoid process and a red throat with slightly swollen tonsils, the tongue especially being distinctive, with a thick moist yellow coat. In many of the cases with high fever and severe headache the face was reddened and appeared slightly swollen; the neck was slightly stiff and there was a blotchy erythema over the chest and upper abdomen. A certain number of these severe cases had a patch of apparent ecchymosis in the soft tissues of each upper eyelid. Drowsiness was marked, most of the men sleeping all day, and if awakened very soon dozing off again. Epistaxis was noted in about 30 cases. Cough was nearly always present, frequent and harassing for the first two or three days, then usually disappearing altogether, but often becoming loose, with mucopurulent expectoration. Delirium was noted but once. Except for a few cases which developed severe bronchitis examination of the heart and lungs was negative; the spleen was not enlarged and reflexes were normal. In 211 cases from Companies A, B, D and F records of the temperature (by mouth) were kept. In this series the average duration of fever was 2.25 days. Some men had fever for but one or two observations; the longest duration of fever in which no complications were found was in 10 cases five days, all but 3 of which had temperatures higher than 103° F. It was not the rule, however, that high fever was of longer duration. Two of the patients with temperatures over 104° F. had but two days of fever, and of the cases with 103° F. or more 2 had fever for a day and 22 had but two days of fever. The highest temperature was 104.6° F. There were 64 cases whose temperatures reached 103° F., and of these 15 had 104° F. or more. In 16 cases the fever did not reach 100° F. The highest point in the fever curve was reached on the first day in 152 cases, on the second day

in 56 cases and on the third day in 3 cases. Defervescence occurred rapidly, *i. e.*, in twelve hours, in 113 cases and gradually in 98 cases. After fever had disappeared physical weakness was marked for two or three days and the men were not, as a rule, fit for duty in less than four days. Often backache persisted for several days after the disappearance of the fever.

Complications were quite uncommon, there being 4 cases of bronchopneumonia, 1 case of frontal sinusitis, 2 cases of discharging ears, both in men who had a chronic suppurative otitis media, and about 10 cases of severe laryngitis. There was 1 death, bronchopneumonia, occurring some days after the soldier had been sent to the hospital. A number of cases relapsed in two or three days after being allowed up. These relapses were, as a rule, more severe than the primary attack, especially in the respiratory symptoms, though the lungs were negative to physical examination. Second attacks, occurring two weeks or more after the first attack, were seen, but were uncommon.

Medication was limited to an initial purge and sodium salicylate. On a number of cases acetphenetidin was tried, but these men were not as comfortable and the muscular pain especially was not relieved. In 2 cases the sodium salicylate was held responsible for nausea and vomiting. All were given a light diet, mainly soups and toast, and an effort was made to keep every case in bed until fever had disappeared.